REMARKS

Claims 47-98 are pending in the present application. Claims 47-98 have been examined and are rejected. Applicant believes that the present application is now in condition for allowance, for which prompt and favorable action is respectfully requested.

Rejection of Claims 47-98 Under 35 U.S.C. §103(a)

Claims 47-72, 75, 78, 81-93, and 95-98 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,606,484 to Faulkner (hereinafter "Faulkner") in view of U.S. Patent No. 6,437,644 to Kenington (hereinafter "Kenington") and U.S. Patent No. 5,051,704 to Chapman, *et al.* (hereinafter "Chapman").

Claims 73, 74, 76, 77, 79 and 80 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Faulkner in view of Kenington and Chapman, and further in view of U.S. Patent No. 5,541,990 to Rahamim (hereinafter "Rahamim").

Claim 94 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Faulkner in view of Kenington and Chapman and further in view of U.S. Patent No. 5,552,734 to Kimura (hereinafter "Kimura").

Claim 97 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Faulkner in view of Kenington and Chapman, and further in view of U.S. Patent No. 5,883,551 to Marchesani, *et al.* (hereinafter "Marchesani").

Faulkner

Examples of the deficiencies of Faulkner with respect to anticipation are detailed in a prior response, and are not repeated here. With respect to Faulkner, it is sufficient to note that Faulkner does not ever generate a squared version of the received RF signal. Rather, Faulkner teaches squaring a downconverted baseband signal. Therefore, Faulkner necessarily fails to teach a gain stage receiving the squared version of the received RF signal and reproducing second order nonlinear distortion in that gain stage. The Examiner has conceded this point as well, indicating that "Faulkner fails to disclose a squaring circuit for receiving a received RF signal provided to an input of a mixer in the receiver".

The Examiner therefore relies on Kenington and Chapman to supply the teaching lacked by Faulkner. However, neither Kenington nor Chapman succeed in doing so.

Kenington

Kenington fails to supply the teaching lacked by Faulkner for several reasons, examples of which are detailed as follows. First, Kenington teaches a predistortion technique. As is well known in the art, predistortion is used to generate the inverse of the non-linear transfer function characteristic in an amplifier. The inverse transfer function is applied to a signal before the signal is amplified, such that the resultant amplification is a linear function. Kenington does not teach reproducing second order nonlinear distortion, as described in claim 47. Second, predistortion is generally used in transmission instead of reception. Indeed, Kenington does not teach its use in a receiver. Third, Kenington only teaches predistortion techniques for odd powers of 3 or greater, never powers of 2, as required by claim 47 (see Kenington c2:38-40).

The Examiner argues that Kenington discloses a "predistorter including a squaring circuit 410 for receiving a received RF signal provided to an input of a mixer 425 in a receiver." This is inaccurate. The input to mixer 425 does not receive "a received RF signal". Rather, it receives the squared version of the received signal after attenuation by attenuator 430 and DC offset compensation in 435. Again, as cited in c2:38-40, the only squaring performed in Kenington is a partial computation of a higher order odd power.

The Examiner directs attention to FIG. 11 as an example of a squaring circuit. However, FIG. 11 is a circuit for generating the third power of the received RF signal, not a squaring circuit as the examiner suggests. (See the cited text at c7:55-57: "By mixing the squared RF signal with the original RF signal, the output of the mixer 425 ideally reproduces a pure cubic signal.") Although a mixer, such as 410, may be used to create a square of a signal, in Kenington, the squared signal is multiplied again in mixer 425 to produce the third power. Nowhere in Kenington is a second order nonlinear distortion reproduced and coupled to an output of the receiver to generate a downconverted baseband signal characterized with reduced second order nonlinear distortion. Rather, Kenington specifically ignores compensating for even powered harmonic distortion, since these can be "removed using frequency filtering" (c2:22-26). This is clearly not the technique used in the pending claims.

In summary, Kenington does not teach the squaring circuit as recited by claim 47, and so does not in combination with Faulkner or Chapman supply all the claim limitations. Furthermore, Kenington specifically teaches away from using its techniques for second order

nonlinear distortion, and is therefore not properly combined with Faulkner, Chapman, or any other reference to bolster an obviousness contention.

Chapman

The Examiner further concedes that "the combination of Faulkner, Kenington and Chapman fails to disclose the use of a feedforward technique in the non-linear distortion circuit". It is clear that the inclusion of Chapman in this sentence was a typographical error, as Chapman is presented by the Examiner to introduce the concept of feedforward techniques.

It is important to note at the outset that Chapman is insufficient to cure the deficiencies of Faulkner and Kenington described above. Therefore, whether Chapman teaches the use of feedforward techniques is a moot point. Nonetheless, some inquiry is due to determine the applicability of Chapman to the pending claims. It turns out Chapman fails as a suitable reference in much the same way as Kenington.

Like Kenington, Chapman is used only to compensate for odd order distortion (third order, in this case), not second order. Chapman does not teach a squaring circuit, as recited by claim 47. Rather, Chapman teaches a Least Mean Squares (LMS) algorithm for distortion cancellation, which is not similar. For example, see Chapman's LMS circuit, detailed in FIG. 6.

Also like Kenington, Chapman fails to teach its use in a receiver. Rather, the only examples taught in Chapman are applications to transmitters (Chapman c4:18-40). Those of skill in the art would expect this, since third order distortion compensation techniques are typically deployed to solve transmitter issues.

In summary, Chapman in combination with Faulkner and Kenington fails to teach each and every claim limitation. Like Kenington, Chapman addresses only third order harmonic distortion, and does not teach a squaring circuit as recited in the claims.

It would be clear to those of skill in the art that the combination of these three references would not be successful, since the combined circuit would not perform the desired functionality. Kenington and Chapman do absolutely nothing to reduce second order distortion. The predistortion techniques of Kenington are not compatible with the LMS

technique of Chapman, nor the baseband processing technique of Faulkner. This is yet more evidence rebutting the combination of these references for an obviousness rejection.

Since the combination of the Faulkner, Kenington, and Chapman references fails to teach each and every claim limitation, since Kenington and Chapman teach away from the use of their techniques for second order distortion (thus the combination of these references is not proper for supporting a finding of obviousness), and further since the combination of these references would not be successful, the rejection to claim 47 should be withdrawn.

The same arguments given above for the combination of Faulkner and Kenington, as well as the combination of Faulkner, Kenington and Chapman, apply to the other independent claims 81, 86, 91 and 98 as well. Therefore, the rejections of these claims should be withdrawn. In addition, for the same reasons, each of the rejections for the corresponding dependent claims should also be withdrawn.

CONCLUSION

In light of the above, Applicant submits that the application is in condition for allowance, for which early action is requested.

Please charge any fees or overpayments that may be due with this response to Deposit Account No. 17-0026.

Respectfully submitted,

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